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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/000,020	12/04/2001	Masamoto Tago	WNZ-2427	7977

466 7590 04/23/2003

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ARLINGTON, VA 22202

EXAMINER

NGUYEN, DILINH P

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/000,020

Applicant(s)

TAGO ET AL.

Examiner

DiLinh Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Tago et al. (Pub. No. US 2002/0090756 or JP 2002-110726).

Tago et al. disclose a method for sequentially laminating and mounting a plurality of semiconductor chips each having an electrode surface, comprising the steps of:

activating the electrode surfaces of the semiconductor chips (figs. 3A-3B, paragraph 0074 and column 6, line 21) which are arranged in opposition to each other;

positioning the semiconductor chips; wherein chip 1 can be bonded with the substrate 4 or with another chip in order to achieve the same result (paragraph 0072);

laminating and bonding the semiconductor chips by pressing such that a reaction layer 5 is suppressed excessively (figs. 3A-3B, paragraph 0065); and

entirely heating the semiconductor chips so as to form the reaction layer after lamination and bonding of all the semiconductor chips are completed (paragraphs 0065-0066]).

- Regarding claim 2, Tago et al. disclose supersonic wave is applied in addition to the pressing in the laminating and bonding step (paragraph 0026).

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- Regarding claim 3, Tago et al. disclose a bump 2 is formed on the semiconductor chip, and the electrode surface includes solder 3 formed on the bump.
- Regarding claim 4, Tago et al. disclose a bump 2 is formed on the semiconductor chip and the electrode surface includes solder containing an active component formed by electroless plating (paragraphs 0084 and 0095).
- Regarding claims 5-6, Tago et al. disclose the reaction layer comprises a bonding layer made of solder and the reaction layer is uniformly formed between the semiconductor chips.
- Regarding claim 7, Tago et al. disclose the activating step is carried out in order to remove an organic substance on the electrode surface (par. 0074).
- Regarding claim 8, Tago et al. disclose the pressing step is carried out such that the bonding is performed via interatomic force by approaching the activated electrode surface to an interatomic distance.
- Regarding claims 9-12, Tago et al. disclose the activating step is carried out by an atomic beam of inactive gas excited by plasma, irradiating radical fluorine, sputtering and reduction gas (figs. 3A-3B, par. 0074).

Conclusion

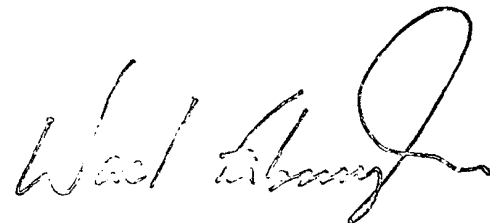
Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (703) 305-6983. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax phone numbers

for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

DLN
April 14, 2003

A handwritten signature in black ink, appearing to read "Wael Libany". The signature is fluid and cursive, with a large loop at the end.

SUPPLEMENTARY PRIMARY EXAMINER
TECHNOLOGY CENTER 2800